

National Park Service
U.S. Department of the Interior
Glacier National Park
Montana



Finding of No Significant Impact

Quartz Creek Fish Barrier

September, 2004

**FINDING OF NO SIGNIFICANT IMPACT
QUARTZ CREEK FISH BARRIER
GLACIER NATIONAL PARK
WEST GLACIER, MONTANA**

The upper Quartz drainage is the only one of the ten major drainages of the Flathead River watershed in Glacier National Park that is altogether free of non-native fish species and contains the Columbia River population of bull trout (*Salvelinus confluentus*). This sub-population of bull trout was classified under the Endangered Species Act (ESA) as threatened by the U.S. Fish & Wildlife Service (USFWS) in June, 1998. The reason that Quartz Creek has not been invaded by lake trout (or at least they are not known to have established) is uncertain, but may be related to the somewhat longer migratory corridor and difficulty of passage into this basin. The fact that virtually all other accessible lakes (McDonald, Harrison, Kintla, Bowman, Logging, and Lower Quartz Lake) on the west side of the Park have been invaded by lake trout makes the future potential for invasion of Quartz Lake highly probable and not merely speculative.

During the period 1999-2001, the USFWS's Creston Fish and Wildlife Center in Kalispell, Montana, completed a study entitled "Glacier National Park, Flathead Drainage Lake Survey, and Fish Passage Evaluation". Their report stated the following: "Clearly, the Quartz Lake chain is one of the remaining strongholds for bull trout in the Flathead drainage on the west side of Glacier National Park. It should be protected from lake trout or other non-native species introductions at all costs".

Non-native lake trout (*S. namaycush*) began to appear in park waters west of the Divide in the late 1950s and early 1960s via the Flathead River system that forms Glacier's western and southern boundary. Other recent invaders into the park's western waters are the rainbow trout and brook trout. Lake trout are known to cause major adverse impacts on native fish populations. These impacts have been documented on Kintla, Bowman, and Logging lakes in the North Fork of the Flathead River drainage as well as numerous other lakes where lake trout have become established. In all cases, there has been a significant decline in native fish populations. Non-native fish can affect native fish populations by preying on their young, hybridizing with the native fish, eating their food sources, and out-competing the native fish in the natural system. These impacts could be especially devastating to the declining bull trout and westslope cutthroat trout, a Montana Species of Special Concern, in addition to the entire native aquatic assemblage.

The objective of the proposed project is to create a barrier to prohibit the expansion of non-native fish species (primarily lake trout but also brook, rainbow, and Yellowstone cutthroat trout), into the upper Quartz drainage, and thereby protect the integrity of the native fish populations in this area. National Park Service (NPS) and USFWS biologists surveyed the Quartz Creek drainage from its confluence with the North Fork to Upper Quartz Lake. It was concluded that the only feasible location to construct a barrier on Quartz Creek was at a location between Middle and Lower Quartz lakes, especially considering that lake trout have been confirmed in Lower Quartz Lake. Although this site will allow passage of fish from the Flathead River system into the drainage as far as Lower Quartz Lake, it will protect the upper reaches of the drainage including Middle Quartz Lake, Quartz Lake, Cerulean Lake, and their associated tributaries.

PREFERRED ALTERNATIVE

The USFWS and NPS biologists will construct a fish barrier in Quartz Creek approximately 100 yards below Middle Quartz Lake. USFWS fish biologists believe that a properly designed barrier will prevent the passage of fish, including lake trout. The structure will be designed to take advantage of the lake trout's poor ability to ascend barriers in a stream while still allowing for movement of fish downstream. Lake trout typically use slow moving pools along the edge of creeks to move upstream because the main channel of a creek is too powerful to allow passage. Consequently, this project will entail the construction of a barrier that stretches from the creek bank to the edge of the main creek channel on both sides of the creek. This will direct more water through a narrow passage, increasing its force, and making it impassable to fish.

The barrier will consist of gabions (metal cages) filled with available rocks and boulders found on site (approximately 576 ft³ of stone required). These porous structures will still allow water to flow through the creek edges without allowing the passage of fish. Approximately, 24 gabions (each 2' x 2' x 6') will be installed. In addition, the location of the barrier was chosen to take advantage of naturally occurring boulders to form part of the barrier. A small amount of excavation along the creek bank may be necessary to ensure no openings are left that fish could fit through. Large logs may be placed upstream of the gabions, across the main channel, to keep fish from jumping upstream. These logs will be obtained by cutting up to three large diameter (about 24 inches dbh) conifers, unless dead and down material of large enough size can be located nearby. The barrier will be approximately 50'L x 3'W x 6'H.

The work crew, equipment, and materials will be packed to the head of Middle Quartz Lake where they will be loaded on to a canoe. The materials will be paddled down to the end of the lake where it will be carried on foot the final few hundred feet. The work crew (6-8 total) will stay at the backcountry cabin at the foot of Quartz Lake and Quartz Lake campground, and the project will take approximately 10 days in mid-September to complete. The only motorized equipment anticipated to be used will be a chain saw to cut up the logs. Work will begin no earlier than one hour after sunrise.

Mitigation Measures

- Construction will occur in September to avoid impacts on denning or nesting wildlife and to take advantage of low water levels.
- Work will begin no earlier than one hour after sunrise to minimize disturbance to wildlife and end before 7 p.m.
- Feeding or disturbing wildlife will be prohibited.
- During construction, a park employee will be at the construction site to monitor sediment releases. If these releases are deemed excessive, the activity will be halted until the stream clears. At that time work activities may proceed.
- Debris that may fall into the stream as a result of construction activities will be removed.
- Chain saws will only be used for one day.
- No explosive material will be used.
- If previously unidentified cultural resources are identified during construction activities, work will cease in the immediate vicinity of the identified resources until Section 106 procedures are complete.
- Additional mitigation measures may be identified as the project proceeds.

OTHER ALTERNATIVES CONSIDERED

A No Action Alternative was considered as required by the National Environmental Policy Act. Under the No Action Alternative, the NPS would not construct a fish barrier on Quartz Creek. Non-native lake trout would most likely migrate up the drainage from Lower Quartz Lake and eventually occupy the entire drainage.

ENVIRONMENTALLY PREFERRED ALTERNATIVE

The environmentally preferred alternative is determined by applying the criteria suggested in the National Environmental Policy Act of 1969 (NEPA), which is guided by the Council on Environmental Quality (CEQ). The CEQ provides direction that the “environmentally preferable alternative is the alternative that will promote the national environmental policy as expressed in NEPA Section 101”:

1. fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;
2. assure for all generations safe, healthful, productive, and esthetically and culturally pleasing surroundings;
3. attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences;
4. preserve important historic, cultural and natural aspects of our national heritage and maintain, wherever possible, an environment that supports diversity and variety of individual choice;
5. achieve a balance between population and resource use that will permit high standards of living and a wide sharing of life’s amenities; and
6. enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

The Preferred Alternative achieves criteria 1, 3, and 4 because the fish barrier will preserve native fish populations in the Quartz Creek drainage, thereby providing long term protection of a listed species. The No Action Alternative would not offer any protection to the upper Quartz drainage from the invasion of non-native aquatic species, and does not meet any of the criteria. Therefore, the environmentally preferred alternative is the Preferred Alternative because it will preserve the upper Quartz drainage (lakes and streams) in its natural state.

WHY THE PREFERRED ALTERNATIVE WILL NOT HAVE A SIGNIFICANT EFFECT ON THE HUMAN ENVIRONMENT

As defined in 40 CFR Section 1508.27, significance is determined by examining the following criteria:

Impacts that may be both beneficial and adverse.

There will be no impacts on wetlands, Wild and Scenic Rivers, prime and unique farmlands, cultural resources (including Historic Buildings and Structures, Cultural Landscapes, Ethnographic Resources, and Museum Collections), or environmental justice. Impacts to soils, vegetation, wildlife, water quality, air quality, natural soundscapes, socioeconomics, floodplains, and proposed wilderness will be negligible to minor, short term, and adverse. These impacts

will result from temporary construction activities such as use of a chainsaw and minor sediment releases. The only resource topic determined to potentially be impacted at a level greater than minor was aquatic resources. The fish barrier will result in negligible, short-term, localized, adverse impacts on aquatic resources due to sediment releases and the presence of workers in the water during construction. The exclusion of non-native fish from the upper Quartz Creek drainage will result in moderate, long-term, beneficial impacts on aquatic resources in the drainage, and possibly beyond this drainage if local fish are used in future re-stocking efforts.

Degree of effect on public health or safety.

The preferred alternative will have no impacts on public health and safety because of its remote location.

Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetland, wild and scenic rivers, or ecologically critical areas.

The upper Quartz drainage is the only one of the ten major drainages of the Flathead River watershed in Glacier National Park that is altogether free of non-native fish species and contains the Columbia River population of bull trout (*Salvelinus confluentus*). The fish barrier will result in moderate, long-term, beneficial impacts to the aquatic resources of this unique drainage by excluding non-native fish from its upper reaches.

Degree to which effects on the quality of the human environment are likely to be highly controversial.

Two of the 12 letters received from the public during scoping for this project stated the author did not support the project and that it was a waste of public monies. Nine members of the public supported the project (and one requested additional information). One letter received during the comment period on the environmental assessment raised a few concerns that are addressed in the Public Involvement section below and attached errata sheets. However they did not oppose the project. While appearing to be controversial with a small number of individuals, the project is not highly controversial.

Degree to which effects on the quality of the human environment is highly uncertain or involves unique or unknown risks.

There are no effects to the human environment that are either highly uncertain or that involve unique or unknown risks.

Degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.

The action does not establish a precedent for future actions or represent a decision about a future consideration.

Whether the action is related to other actions with individually insignificant but cumulatively significant impacts.

The action will not act in conjunction with other actions to produce cumulatively significant impacts.

Degree to which the action may adversely affect districts, sites, highways, structures, or objects listed on the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources.

The project is located in an undeveloped area of the park. No historic buildings and structures, cultural landscapes, or museum collections are in the project area. The park has consulted with the Confederated Salish and Kootenai Tribes Historic Preservation Department and the Blackfeet Tribe Cultural Liaison to identify ethnographic properties and none were identified. An archeological survey (June 2003) of the proposed site, between Middle and Lower Quartz lakes, determined that the creek runs in a relatively narrow channel with steep banks on either side. The steepness of the topography bars access to the creek, and there is no evidence or possibility of a trail or travel route along the creek. The park Cultural Resource Specialist has determined that the area of potential effect has been adequately surveyed and no identified and/or unevaluated historic properties exist, and the probability of discovering historic properties within the area of potential effect is highly unlikely.

For Section 106 purposes, the park will document a “no historic properties affected” finding in its annual report to the State Historic Preservation Office in accordance with the *Programmatic Agreement among the National Park Service (Glacier National Park), the Advisory Council on Historic Preservation, and the Montana State Historic Preservation Officer for Management of Historic Properties in Glacier National Park*. Concurrence from the State Historic Preservation Office is not required as the project falls within the parameters of the programmatic agreement.

Degree to which the action may adversely affect an endangered or threatened species or its critical habitat.

The National Park Service has determined that the Preferred Alternative would have no effect on bald eagle, grizzly bear, Canada lynx, and gray wolf, and “may affect, but not likely to adversely affect” bull trout in accordance with Section 7 of the Endangered Species Act. A Biological Assessment was prepared and the USFWS concurred with this determination (May 6, 2003).

Whether the action threatens a violation of federal, state, or local environmental protection law.

The action does not violate any federal, state, or local environmental protection laws.

PUBLIC INVOLVEMENT

Public scoping was conducted from May 12, 2003 until June 9, 2003. Letters were sent to the park's mailing list for EAs, and various federal, state, and local agencies, including the USFWS and the Blackfeet and Confederated Salish and Kootenai Indian Tribes. A press release was issued on May 15, 2003 announcing scoping and *The Missoulian* (one of the state's larger newspapers) wrote an article on the project that was cited by a few of the commenters.

Fifteen comment letters were received during scoping. The Montana State Historic Preservation Officer wrote requesting that a cultural resource inventory be conducted. The Army Corps of Engineers wrote that the project most likely would require a General Permit under Section 404 and approval from Montana Fish, Wildlife and Parks. Nine members of the public wrote supporting the project, citing the need to protect habitat and to preserve native species. Two members of the public wrote stating that they did not support the project and that it was a waste of public monies. One individual wrote asking for more information about the barrier and its effects.

The EA was mailed to the park's mailing list and interested publics on August 13, 2004, and a press release was issued on the same day announcing the availability of the EA. The EA was placed on a 30-day public review. Comments were accepted through September 13, 2004. The document was made available on the park's website. Copies of the EA were sent to appropriate federal and state reviewing agencies and the Blackfeet and Confederated Salish-Kootenai tribes.

Four comments were received during this public review period. One commenter had two concerns about the project: 1) that the site was chosen because of visual concerns when a site below Lower Quartz Lake would protect more habitat, and 2) the gabions should not be made of galvanized wire mesh that could eventually release toxic zinc into the water.

Response: *Thank you for your support and concerns regarding the project. The site above Lower Quartz Lake was chosen because lake trout are already present within Lower Quartz Lake. The gabions are made of a non-galvanized steel mesh.*

Friends of the Wild Swan raised the following:

Question 1: Is the stream reach between Lower and Middle Quartz Lakes a bull trout and/or cutthroat trout spawning area?

Response: *The attached errata sheet modifies page 12 of the EA and provides additional information about fish spawning in the area. The proposed fish barrier is located about 2 km upstream of the probable spawning area for fish from Lower Quartz Lake and will not affect the downstream spawning area. The spawning runs for fish in Lower Middle and Upper Quartz Lake will not be impeded by placement of the barrier in the proposed location.*

Question 2: Will blockage of upstream movements of bull trout and cutthroat trout negatively impact the genetic integrity of populations of these species in Upper and Middle Quartz Lakes?

Response: *This was addressed on page 13 and 17 of the EA. additionally, all evidence indicates that the native fish species assemblage in Upper and Middle Quartz Lakes, and Cerulean Lake, are each unique self-sustaining resident fish communities. There is undoubtedly some recruitment of both cutthroat trout and bull trout from these headwaters reaches to the downstream fishery (i.e., Flathead Lake and associated main-stem rivers and streams). This will continue unimpeded by the proposed barrier. The extent of upstream fish movements from the lower basin into the upper*

Quartz Creek drainage is believed to be quite small based on fish trap operations by MFWP along several North Fork tributaries, including Quartz Creek, during the 1980's. Additionally, genetic samples from surveys conducted by US Fish and Wildlife Service in these lakes in 2000 indicate there is very limited interchange between these systems. This genetic baseline can be used to assess any potential genetic effects caused by the barrier. Potential genetic risks are long-term concerns that would take many generations to manifest themselves, while the lake trout threat is very much a near-term risk and a much more immediate concern.

Question 3: Will there be monitoring to determine if native fish will be negatively impacted by the barrier?

Response: Yes. Limited pretreatment genetics studies have been done for bull trout and cutthroat trout in all of the lakes in the Quartz Creek drainage. Additional monitoring is planned as part of an ongoing Ph.D. study being coordinated by the USFWS. In the unlikely event that salmonid genetic heterozygosity is compromised by the barrier, a condition that would take several decades at best to document; more likely a century), a small number of bull trout and/or cutthroat trout collected from the lower basin could periodically be placed in the upper lakes to infuse new genetic material into the populations and, thus, prevent the loss of genetic vigor due to inbreeding. Additional analysis would be conducted before such an effort was undertaken. However, given the robustness of these populations in the upper part of the drainage, and the fact that the fish community is largely resident (i.e., live out their entire life cycle within these lakes and adjoining streams), this is not expected to be a problem. The isolated bull trout population in Upper Kintla Lake, 30 miles north, does not recruit fish from the lower basin due a barrier falls below the lake and no ill-effect has been observed in that population.

Question 4: Is this project part of a larger basin-wide strategy to deal with lake trout intrusions into water that are not currently occupied by this species?

Response: The attached errata sheet modifies pages 2, 15, 16 and 17 of the EA. The US Fish and Wildlife Service has prepared a Recovery Plan for bull trout in the Flathead River Basin. It deals with the issues of habitat connectivity and bull trout movements, and makes recommendations to protect pristine bull trout populations. The prevention of lake trout encroachment into waters occupied by native bull trout through the construction of blocking weirs or barriers is identified as one means for dealing with nonnative lake trout. However, implementation of all the recovery measures recommended by the USFWS will require a high degree of collaboration among several resource agencies and additional funding for implementation. In the meantime, Glacier National Park is concerned about the possible invasion of lake trout into the Upper Quartz Creek drainage and has determined that it will be imprudent to wait until a basin wide solution is implemented to deal with the problem of lake trout incursions into waters occupied by bull trout.

Other commenters stated their support for the project.

A press release will be released announcing the availability of the FONSI. A copy will be sent to all commenters, and it will be placed on the park's web site.

CONCLUSION

The proposal does not constitute an action that normally requires preparation of an environmental impact statement (EIS). The proposal will not have a significant effect on the human environment. Negative environmental impacts that could occur are minor. There are no unmitigated adverse impacts on public health, public safety, threatened or endangered species. No highly uncertain or controversial impacts, unique or unknown risks, cumulative effects, or elements of precedence were identified. Consultation with the US Fish and Wildlife Service has been completed under Section 7 of the Endangered Species Act. The park will document a “no historic properties affected” finding in its annual report to the State Historic Preservation Office in accordance with the *Programmatic Agreement among the National Park Service (Glacier National Park), the Advisory Council on Historic Preservation, and the Montana State Historic Preservation Officer for Management of Historic Properties in Glacier National Park*.

Concurrence from the State Historic Preservation Office is not required and no further Section 106 analysis is required. The Montana Department of Environmental Quality issued a 318 Permit that is valid September 1-November 1, 2004. The U.S. Army Corps of Engineers issued authorized the activity under Nationwide Permit 27 and Montana Fish, Wildlife and Parks issued a 124 Permit. Implementation of the action will not violate any federal, state, or local environmental protection laws.

The action will not result in major, adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation and proclamation of Glacier National Park; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park’s general management plan or other relevant National Park Service planning documents, there will be no impairment of the park’s resources or values.

Based on the foregoing, it has been determined that an EIS is not required for this project and thus will not be prepared.

Recommended: Michael O. Holm 9/14/04
Superintendent Date

Approved: Hal Grovert 9/14/04
Intermountain Regional Director Date

Errata Sheet

The following text modifies page 12 of the EA and is inserted between Table 3 and the subheading Bull Trout.

Bull trout or cutthroat trout redds have not been observed along the reach of Middle Quartz Creek between Lower and Middle Quartz Lakes during visual surveys conducted sporadically over the past 5 years. The gradient of most of this reach is very steep and the water temperature is higher in the fall than what is considered typical for a bull trout spawning stream. Moreover, suitable spawning gravels and rearing habitats are generally not found in this reach, as the substrate is comprised almost exclusively of large cobble and boulders. The lowermost couple hundred meters just upstream of Lower Quartz Lake does contain suitable spawning habitat. In this reach the stream is braided and lower gradient with a lot of large wood, beaver dams and other complex rearing habitat. Cutthroat trout spawning and a limited amount of bull trout reproduction probably occur in the stream section immediately upstream from the inlet of Lower Quartz Lake. The proposed barrier is located about 2 km upstream of the probable spawning area for fish from Lower Quartz Lake.

In the past month, USFWS personnel located about 32 westslope cutthroat trout redds in the approximately 200 meters of channel between upper Quartz and Middle Quartz Lake. Last fall, several potential bull trout redds were also found in that reach. It is highly probable that trout residing in Middle Quartz Lake spawn mostly in the reach of Quartz Creek upstream of Middle Quartz Lake. There is little or no suitable spawning habitat in the outlet of Middle Quartz Lake.

Significant spawning habitat for fish from upper Quartz Lake is found in Quartz Creek upstream of the lake. Since bull trout require cold spawning temperatures they are much more likely to migrate upstream of Quartz Lake than to use the warmer effluent waters below the lake. On October 8, 2003, USFWS personnel surveyed Quartz Creek upstream of upper Quartz Lake and photo-documented excellent spawning and rearing habitat. A total of 31 bull trout redds were located in about 1,250 meters of stream. It appears highly probable that the upper reaches of Quartz Creek, upstream of the upper Quartz Lake, are the primary spawning grounds for fish from this system.

The following text modifies the 2nd full paragraph on page 2 of the EA that begins “During the period 1999-2001....”

The US Fish and Wildlife Service has prepared a Recovery Plan for bull trout in the Flathead River Basin. It addresses the issues of habitat connectivity and bull trout movements, and makes recommendations to protect pristine bull trout populations. The prevention of lake trout encroachment into waters occupied by native bull trout through the construction of blocking weirs or barriers is identified as one means for dealing with nonnative lake trout.

The following text modifies page 15 of the EA under Cumulative Impact Analysis and follows the bulleted items.

The US Fish and Wildlife Service have prepared a Recovery Plan for bull trout in the Flathead River Basin. It addresses the issues of habitat connectivity and bull trout movements and makes recommendations to protect pristine bull trout populations. The prevention of lake trout encroachment into waters occupied by native bull trout through the construction of blocking weirs or barriers is identified as one means for dealing with nonnative lake trout.

The following text modifies the first sentence under Cumulative Impact Analysis on page 16 of the EA.

This alternative would not support the US Fish and Wildlife Service's Recovery Plan for bull trout in the Flathead River Basin because it would allow lake trout encroachments into waters occupied by native bull trout populations.

The following text modifies the first sentence under Cumulative Impact Analysis on page 17 of the EA.

This alternative would support the US Fish and Wildlife Service's Recovery Plan for bull trout in the Flathead River Basin because it would prevent lake trout encroachment into waters occupied by native bull trout populations.